(72) Inventors:
• Ali-Vehmas, Timo
24260 Salo (FI)
• Heinonen, Pekka
02100 Espoo (FI)
• Okkonen, Harri
02940 Espoo (FI)
• Blants, Lioudmila
02170 Espoo (FI)
• Saarinen, Petteri
00100 Helsinki (FI)

(74) Representative: Brax, Matti Juhani
Berggren Oy. Ab,
P.O. Box 16
00101 Helsinki (FI)

(54) **Method for using services offered by a telecommunication network, a telecommunication system and a terminal for it**

(57) The invention relates to the use of intelligent network services from a terminal (3) of a telecommunication network and particularly to the introduction of new services and a programmable user interface of a terminal. A service provider (5) programs service functions in a switching centre (1) of a telecommunication network and delivers to a user a program which is loaded in the user's terminal (3). According to the loaded program the terminal, advantageously a telephone apparatus equipped with a display (7), shows to the user the available services and the corresponding commands assigned to the function keys (8a) of the terminal. The user gives the required commands which advantageously are one-push-of-a-button long and the meanings of which at each particular situation are shown on the terminal's display. Advantageously the program is delivered to the user by loading it in an intelligent card (6) controlling the operation of the terminal.
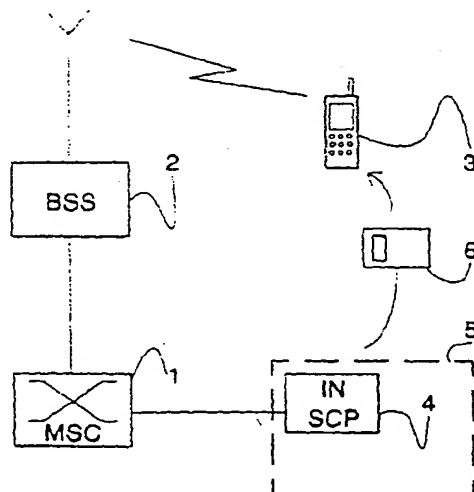
Fig. 1

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that

- a certain service is created and said switching apparatus is made to operate according to said service,
- a set of instructions is drawn up which, when loaded in a terminal, controls said terminal in a manner such that said service can be used via the terminal, displaying on the output means of the terminal information about the service in question and using the input means to make selections concerning the service in question, and - said set of instructions is conveyed to the user to be loaded in the terminal.

The invention also relates to a telecommunication system to implement the method described above. The telecommunication system according to the invention is characterized in that it comprises means for conveying sets of instructions concerning new services to the user to be loaded in a user terminal.

The invention also relates to a terminal for the telecommunication system described above. The terminal according to the invention is characterized in that it comprises means for loading sets of instructions concerning new services, means for displaying to the user information about said new services in a manner specified by the sets of instructions and means for making user selections concerning said new services in a manner specified by said sets of instructions.

The invention is based on the idea that the concept of the intelligent network can be extended towards the user and the terminal. Embedded software controlling the operation of the terminal includes an extension interface whereby the user or the service provider can add features to the operation of the terminal, advantageously a telephone, which both indicate to the user the services offered and the actions required to use them and see to that the commands corresponding to the user's selections are sent to a switching centre of the network. The extension can be called a programmable user interface and in the preferred embodiment it comprises menu-driven functions so that the user can browse through the range of options on the display of the phone and advantageously advance with one-button commands through various selections to the desired goal. Services and commands are added by sending an extension program or code from the service provider to the user to be loaded in the phone where it produces new menus and/or options and handles the corresponding command traffic between the phone and the switching centre of the network. The extension program can be delivered to the user on a separate storage medium, such as an intelligent card, or it can be transferred as a data message over the telecommunication network.

In the arrangement according to the invention a terminal, advantageously a telephone, serves as a platform which only has to include certain minimum functions related to updating menus and options and to dis-

playing those menus and options to the user and to interpreting user selections as well as to handling the transmission and reception of the command traffic corresponding to those user selections between the phone and the switching centre of the intelligent network. These functions will be described in more detail later. For phones from different manufacturers to be be compatible as regards the services of a certain network the characteristics of the phones have to be standardized at least to some level.

Extension and update information, which is programmed into the phone for a new service, has to be expressed in the form of a computer program or corresponding instructions which can be loaded in the storage media used by the processor controlling the operation of the phone. The programming language or the like, in which the extension and update programs are implemented, is advantageously a set of sentences with a standardized syntax so that in principle anyone can draw up an extension program for a particular service, hire network capacity from a network operator and offer his services to users.

The invention is described in greater detail with reference to the preferred embodiments, presented for the sake of illustration, and to the accompanying drawings, wherein

Fig. 1   shows a simple telecommunication network in which the method according to the invention can be applied,

Fig. 2   shows in a schematic way a mobile phone that can be used in the manner according to the method according to the invention, and

Fig. 3   shows in a schematic way the parts of the mobile phone shown in Fig. 2 on the operation of which the invention has effect.

Like elements in the drawings are denoted by like reference designators.

Fig. 1 shows in a schematic manner part of a cellular radio telephone network capable of intelligent network operation, wherein the method according to the invention can be applied. The central unit in the network is a mobile switching centre 1 (MSC) which includes all the data processing, switching and data base properties that are needed for network control and maintenance. Under the mobile switching centre there are several base station subsystems 2 (BSS), of which only one is shown, for reasons of simplicity. The subsystems 2 include base station controllers and base stations (not shown), the latter providing a radio interface for mobile stations 3 (MS) operating in the network. In the network shown, the mobile switching centre 1 has a wire link to a separate intelligent network service control point 4 (IN SCP) which may be located e.g. in the premises of the telecommunications company 5 providing the services,

presses numeric key 2 on the keypad followed by the "Reserve" function key, the central processing unit 9 sends via the telephone part 12 an automatic message to the telephone number of that particular movie theatre, making a reservation by the name corresponding to the intelligent card of the user in question for two tickets for the show selected. Instead of the automatic reservation the user could select "Call" to make an ordinary voice call to the theatre in question. In the case described above, the procedure ends simply by pressing the "End" function key.

Use of the service described above requires certain functions of the mobile phone 3, such as reading of character sequence data from the intelligent card 6, reading of input from the keypad 8 in the form of keystrokes and sending of output to the display 7 in the form of character sequences. Furthermore, automatic bidirectional signalling is required between the central processing unit 9 of the mobile phone and the mobile phone network. Signalling can take place on the speech or data channel. All aforementioned functions are known from the prior art and they are advantageously implemented by programming the commands corresponding to their execution in the form of a computer program in the storage means 10 of the mobile phone's central processing unit.

Instructions and programming data concerning the use of a new service need not necessarily be delivered from the service provider to the user in such a way that the intelligent card 6 is separately brought in to be programmed. The information can also be conveyed via the same telecommunication network in which the other data are transferred. The GSM system includes a specification for a so-called short message function which can be used for sending data messages. The received data can be stored on the SIM card or in the storage means in the mobile phone. In ISDN networks, the arrangement applicable for transferring data according to the invention is known as D-channel data transmission. In the arrangement involving the programming of the intelligent card the user can pay the service provider in cash when the intelligent card is updated. If the data are transferred via the telecommunication network, the billing can be carried out using the same system that is used for the user's telephone bills.

There may be several intelligent cards that can control the operation of the phone. Let us assume that the debit card as it is known today will be developed into an intelligent debit card and the social security card as it is known today will be developed into an intelligent social security card. Then the user can have different, specialized application programs and user interfaces in the different cards. When the user inserts said intelligent debit card in his phone or other terminal equipment, the user interface of the phone is adapted to especially providing bank services, such as information on currency exchange rates, user's bank accounts and pay services. By inserting the intelligent social security card in the phone the user activates a reservation service whereby he can make an appointment in the nearest health centre the phone number of which is stored in the intelligent card. As the user's personal data are also stored in the card, the user need not type or dictate his name and social security code but they are automatically conveyed to the recipient in the form of a short message, for example.

The loading and activation of a certain user interface or other application program can be functionally separated from each other in the terminal equipment. For marketing or service reasons, a service provider may send the loading data to all active terminals in which they are stored in temporary memory. Then the service provider may send to the users a short message, for example, indicating which new service is loaded. If the user accepts the new service, the temporary loading is changed permanent and the service is activated; otherwise it is removed from the memory. The terminal may also automatically decide on the loading and/or activation e.g. on the basis of auxiliaries connected to it. An example of separate loading and activation is a situation wherein the user receives a short message "Wanna bet?" from a local bookmaker. After a positive response the user immediately receives on the display of his phone a betting form loaded previously in the memory which he then fills out and sends to the bookmaker as a short message, for example. Certain user interface loadings and activations, such as gallup polls, may also be disposable and they would be automatically removed from the phone's memory after being used once.

Above it was mentioned that it is advantageous to standardize or otherwise harmonize the programming language or other method used for adding new features in the phone's programmable user interface according to the invention. Standardization brings wide compatibility and even competition between network operators and other service providers. A standardized script language advantageously comprises commands such as the ones below (commands are typed in upper-case letters):

DEFINE APPLICATION = "Cinema"

-    defines the name of an application shown in the list brought to the display,

DEFINE KEY xx = "(any series of DTMF signals)"

-    automatically assigns to a certain key (here xx) a series of tone frequency commands which will be sent when that key is pressed,

DISPLAY STRING = "Sold out"

-    shows on the display a certain character string in a response to a certain situation,

DISPLAY SOFTKEY a = "Films"

comprises means (11) for loading said sets of in-
structions from a portable storage means (6).

10. The terminal (3) of claim 8 or 9, **characterized** in
that it is a telephone apparatus.

11. The terminal (3) of claim 10, **characterized** in that
it is a mobile phone in a cellular radio network.

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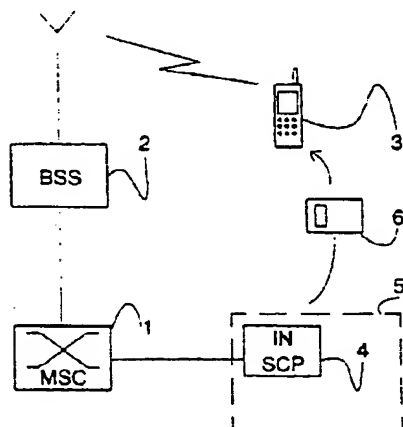
Fig. 1

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**   EP 97 66 0058

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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31-03-1999

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0772367	A	07-05-1997	CN	1152246 A	18-06-1997
EP 0679040	A	25-10-1995	CA	2147184 A	19-10-1995
			FI	951845 A	19-10-1995
EP 0562890	A	29-09-1993	NONE		
EP 0459344	A	04-12-1991	FR	2662891 A	06-12-1991
			AU	643526 B	18-11-1993
			AU	7739591 A	05-12-1991

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